Problem Identification Examples

Example 1

My main objective is to propose a solution for my client and aim to develop and implement the most suitable one which will fulfil her needs. I will begin with identifying the problem and stakeholders, then complete thorough research on similar existing solutions to provide a valuable insight into the favourable aspects I can implement and adapt, and issues that I will need to try and avoid. The final solution will need to be amenable to a computational solution, whilst meeting the needs of my stakeholders and possible hardware and software requirements.

PROBLEM DEFINITION:

THE CLIENT:
My client is a college student, Alex, who would like a challenging game to play in her spare time. My primary objective is for the solution to provide enough challenge for her to maintain interest in the game.

PROBLEM IDENTIFICATION:
The main issue with the current games she plays is that there is not enough challenge and the games are rather tedious and repetitive. Problems typically appear when the games end up lagging on her computer due to multiple users (her family/siblings) using and saving work on the same desktop computer. Her main issue is that her present games do not provide an adequate amount of challenge, thus resulting in her losing interest and avoiding the game altogether.

I will need to develop a game which also meets the hardware and software requirements of her computer, but also incorporates challenging features (e.g. increasing in difficulty, a game mode selection screen, different game mechanics) which ensures that the user has a genuine interest whilst playing. The inputs should be either through the use of a keyboard or mouse, or both. Alex would also like the solution to have a method of checking her progress as she plays the game, and methods of comparing her achievements with others in a leader board. I will also need to include this feature, possibly through the use of a database running in the backend. A main menu will also be required so it is easy for her to navigate.

Example 2 From Painted

Who is the client?:

The “OnfeNetwork” is a small community of gamers, who like to team up and play games competitively. The group consists of an owner, several administrators and other uses that the community have met online. The group has recently been looking for a new game to play together and have decided that it would be fun to have their own custom game to play together and have fun with.

What do they want me to do?:

The owner, Onfe, has tasked me to create their community a small, multiplayer, first person shooter game centred around the theme of paintball. This means that I need to create a game that the player can move a character around a world, and shoot projectiles. Those projectiles should do damage when they hit another player or if hitting a wall should create a paint texture on the surface. All movement should be synced over a server so that all players can view bullets and players in real time, while the server does most of the calculation. They have specified that
they would like eliminations to give points and at the very end of the game, the amount of paint on the map per team is added as a multiplier (for example if a team has 300 points and 44% paint coverage, then their total points become 300 x 1.44 = 432)

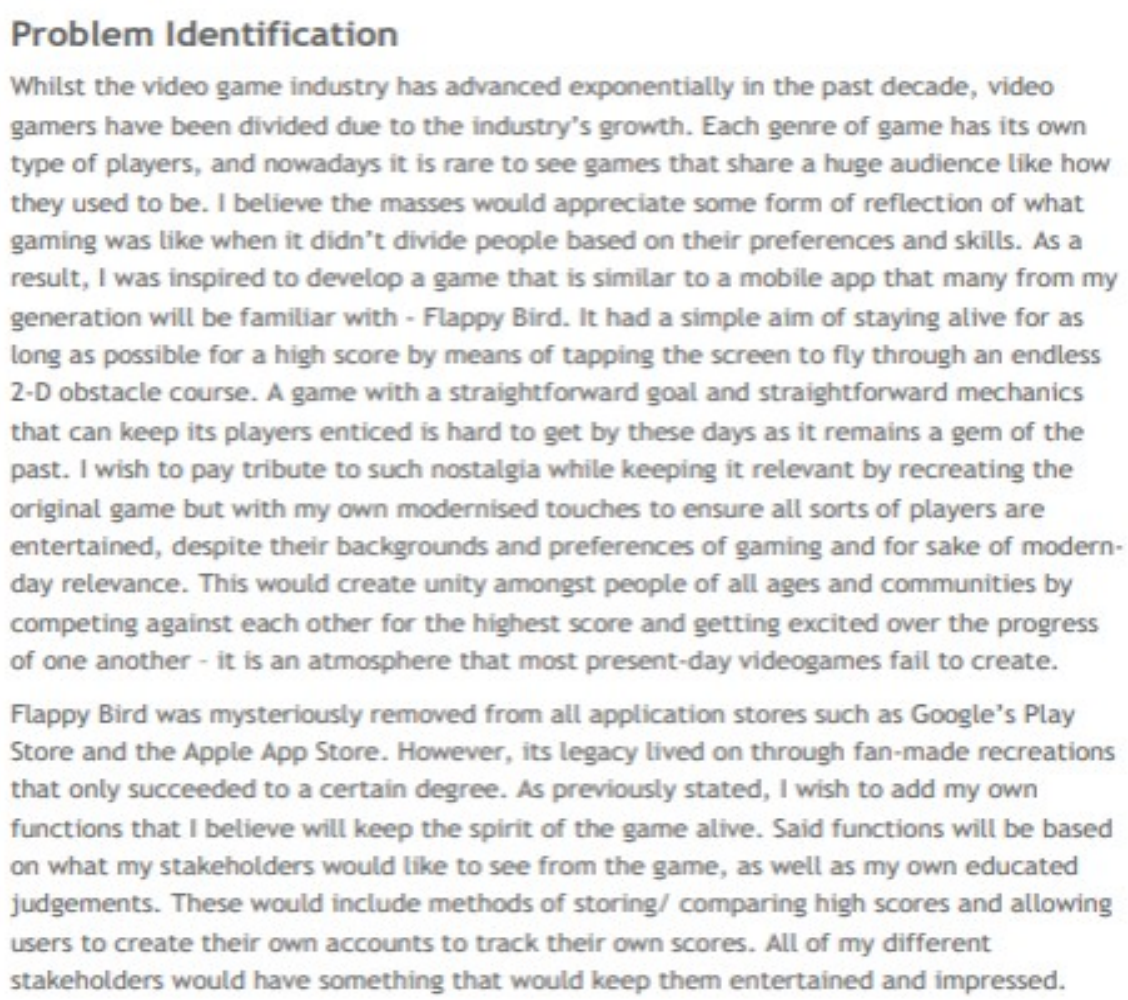
Example 3

PROBLEM IDENTIFICATION

Whilst there is an abundance of maths-based educational games online, most of these are of a very basic level and are generally limited to questions involving only the basic operations (adding, subtraction, multiplication etc.), aiming to help young children learn the essential building blocks of mathematics. The games themselves are often very simple, functioning more as thinly disguised quizzes. These types of educational games may appeal to the younger demographic who haven't had as much experience online, however to older children their interest in the game can be quickly lost. For these reasons there is a market for an educational maths game targeted at an older demographic.

The game would feature questions that are still simple enough to be suited to a game environment, but with a higher complexity and variety of topics than the majority of pre-existing games. Tailoring the game to the GCSE/KS4 maths level would distinguish it from the others, while allowing it to appeal to an older crowd. The questions themselves would be randomly generated, but through data collected from the player's previous attempts their weak/strong topics would be identified and the frequency of questions from these topics would shift accordingly, giving each player a personalised experience.

Example 4 from Flappy Bird



Problem Identification

Whilst the video game industry has advanced exponentially in the past decade, video gamers have been divided due to the industry's growth. Each genre of game has its own type of players, and nowadays it is rare to see games that share a huge audience like how they used to be. I believe the masses would appreciate some form of reflection of what gaming was like when it didn't divide people based on their preferences and skills. As a result, I was inspired to develop a game that is similar to a mobile app that many from my generation will be familiar with - Flappy Bird. It had a simple aim of staying alive for as long as possible for a high score by means of tapping the screen to fly through an endless 2-D obstacle course. A game with a straightforward goal and straightforward mechanics that can keep its players enticed is hard to get by these days as it remains a gem of the past. I wish to pay tribute to such nostalgia while keeping it relevant by recreating the original game but with my own modernised touches to ensure all sorts of players are entertained, despite their backgrounds and preferences of gaming and for sake of modern-day relevance. This would create unity amongst people of all ages and communities by competing against each other for the highest score and getting excited over the progress of one another - it is an atmosphere that most present-day videogames fail to create.

Flappy Bird was mysteriously removed from all application stores such as Google's Play Store and the Apple App Store. However, its legacy lived on through fan-made recreations that only succeeded to a certain degree. As previously stated, I wish to add my own functions that I believe will keep the spirit of the game alive. Said functions will be based on what my stakeholders would like to see from the game, as well as my own educated judgements. These would include methods of storing/ comparing high scores and allowing users to create their own accounts to track their own scores. All of my different stakeholders would have something that would keep them entertained and impressed.

Example 5

Problem Identification

Currently there is no quiz software that adapts the difficulty of its questions automatically. Most of the current popular software either has this as a manual option or none at all. Having an adaptive difficulty system has many benefits related to it; this can range from educational benefits (where separate quizzes don't need to be used for students of varying ability, and instead the quiz is suitable for each student) to increasing the replay value of apps that the system is included with. It could also be used by local pubs to add an extra challenge to their pub quizzes.

The main features of a computer system that I would need for a solution to this problem to work would be a database module such as sqlite3 to control the backend database. This would hold their performance data

which would then be used to calculate the difficulty and pull questions from the corresponding array containing that difficulties questions.

Example 6

PROBLEM IDENTIFICATION

In these past years, technology has developed very fast bringing to our society a new way to solve problems. Gaming is one of the leading sectors which is rapidly diffusing among the people, especially teenagers. A group of gamers who runs a club after school requested me to produce a platform game with different levels. The game will be a two-dimensional game where the user will control the main character with various keys on the keyboard. The game should contain multiple levels where difficulty increases as the player reach checkpoints. My client requested me also to add a unique obstacle across the platform so in that way it will be more compelling. The game must contain some shooting feature where the player can use a weapon or a tool to defeat the enemies through the game. Jumping, running and moving are essential features that it must have to present to my clients what they requested. A specific problem that has been raised by my clients was that nowadays games have upgraded possibilities which people can purchase to complete the game easier; therefore, they requested not to include any of those options because they want a game to test their gaming ability where everyone has the same chance to complete the level. To provide the best experience possible, I need to consider not only the movement of the player but also of the camera. Hence, I will implement a side-scrolling feature which will give to my client the best interaction between eye and movements. Additionally, the game will have an integrated database that keeps record scores, a dashboard where my stakeholders can compare their results. There will be a way to upgrade their character in the game based on the points and levels accumulated. To produce this type of game, I will apply some computational principle such as decomposition, abstraction and concurrent thinking.

STAKEHOLDERS

The stakeholders involved in this project, are members of a local gaming club who gather together to play new, trendy games. The group is made of 5 members. Each member has different preferences and requests. They are familiar with the gaming sector; in fact, they know what to expect for a complex game.

These stakeholders are casual gamers who enjoy playing new games. This game will be modelled for people who enjoy playing video games, but any computers' users may use it.

In the gaming culture, there are different types of genres. Usually, platform games are the most popular. Even in the old years, games like Mario and Sonic were an icon part of the gaming sector. These games are fundamentals for the creation of my project, existing movements like jumping and running are essential in this project. My stakeholders used to play these games, and they found them very enjoyable, but several problems occurred.